

THE EARLIEST BUREAU OF ENTOMOLOGY

BY GAINES LIU

BIOLOGICAL LABORATORIES, HARVARD UNIVERSITY

My interest in the history of entomology in China goes back to 1931 when I was a student at Harvard. It was aroused rather accidentally. As a Chinese, when I read such a book as "A History of Applied Entomology" by Dr. L. O. Howard (Vol. 84, Smithsonian Miscellaneous Collections, 1930), naturally I was very eager to see what the author had to say about China. I was rather puzzled: indeed, I could hardly believe that China was not even mentioned in this book of more than 500 pages, although almost every country on earth was included. Does this omission mean that China has nothing worthwhile to be mentioned in the field of economic entomology, or that what China has is hidden behind her impenetrable language? Ever since then I followed the query as a hobby, and collected materials as they came along.

There is no question now that the Chinese language is the chief obstacle in this respect. This hobby study has led to quite a few startling revelations both in the field and from ancient literature. During the past seven years when I was travelling all over China, first as a Parker Fellow from Harvard University (1931-33) and later as a servant in the government service (1934-37), I have always kept it in mind to learn directly from Chinese farmers in the field what they know about insect control. In many cases I was really surprised to find how simple and ingenious some of their methods are.

Take the use of tobacco stubs and the firecrackers for instance. Among farmers along the Yangtze Valley and also in certain sections in both Fukien and Kwangsi, tobacco stubs are subjected to various means of treatment and used as a preventive against paddy borers. This sounds almost incredible at first blush when we learn that these stubs are planted alongside the rice seedlings several weeks after transplanting the rice. Yet it has been more or less confirmed at the National Agricultural Research Institute,

Nanking, that with the use of the stubs damage from these pyralids is not only reduced but production is also increased. On the other hand, no one has tested the effectiveness of the fire-crackers. These were used in certain sections of Kwangsi as a means of killing tree borers. The method of application is to fire these crackers in the tunnels and then seal the openings with mud. The explosion, the sealing and the fumes left behind must be, at least theoretically, very detrimental to the young larvæ.

The present day Chinese farmers have in store many valuable experiences for us to discover. But when we turn to the ancient Chinese literature, we frequently encounter surprises also. The citrus ants used as a means of checking homopterous pests in citrus orchards, a practice still continued today, was recorded as early as the 10th century in a book called "Ling Bio Lu Yi" by Liu Shen. The practice of cross breeding among the yellow and the white varieties of silkworm was described more or less in detail by Sung Ying Sing in 1637 in his "Tien Kun Kai Wu." Furthermore, probably nowhere in the world could we find today such a complete record of insect damage, particularly that caused by locusts, from the earliest known times down to the present as we will find in China.

All these, however, are still not so surprising. Dr. Howard stated in his book mentioned above that "Comparatively little attention was paid to insect damage in Europe until within the last one hundred years, and even during the early part of that period the damage to forests was the item particularly stressed" (page 1). If this were true and there is no doubt that it is, it is really astonishing to find in "Chow Li" under the section of Chu Kuan the records of a "Bureau of Entomology" with its various divisions, functions, personnels and methods of control so well organized that we could hardly believe it. Yet this book, "Chow Li," is one of the Chinese Classics and appeared long before the Christian era. Before we go any further, let us see what these divisions are. The following is a free translation of the original text.

1. Chien Shih—Division of Insect Borers.
 - a. Personnel—one head and two assistants.
 - b. Function—for the control of insect borers.

- c. Methods—fumigation with “mong ts’ao” (*Illicium anisatum* L.) or by means of “kung ying” (a form of propitiation).
2. Chi Bar Shih—Division of Household Pests.
 - a. Personnel—one head and two assistants.
 - b. Function—for control of household pests.
 - c. Methods—Spray with powder made from clam shells, charcoal and ashes.
3. Kou Shih—Division for Frog Control.
 - a. Personnel—one head and two assistants.
 - b. Function—for control of frogs.
 - c. Method—spray with ashes from “tu chu” (*Chrysanthemum*?). For stopping croaking and noises made by other aquatic animals, use smudging with this plant.
4. Hu Cho Shih—Division of Aquatic Vermin.
 - a. Personnel—one head and two assistants.
 - b. Function—for the control of aquatic vermin.
 - c. Method—Sinking with burning stone (lime?) or chasing with a drum made from “pao tu” (baked earth). To drive away the evil spirit, sink a cross made by piercing an elephant trunk through a board of “tu ku” (a kind of elm or *Ailanthus*).
5. Shue Shih—Division for Poisonous “ku” (internal vermin?).
 - a. Personnel—one head and two assistants.
 - b. Function—for control of “ku.”
 - c. Method—attack with the scented plants as used in “kun shui hui” (a form of propitiation). Compulsion necessary for community action.

There are divisions also for preying beasts, preying birds, forests, and even gramineous vegetation. But they are beyond our scope. Among the five divisions listed above, it is interesting to notice that whenever their actual methods of control fail, they invariably resort to the superstitious form of propitiation. It is also interesting to notice that some of the methods advocated here still persist as vestiges today. For instance, the painting of a wall with lime, charcoal and ashes is still common in the Huai Ho Valley. The use of “mong ts’ao” as a fumigant is also very common in south China.

On the other hand, it is rather difficult to identify the poisonous "ku." Evidence tends to show that it is some form of internal parasite because it is believed to enter the human body through the digestive tract. It is held responsible for some fatal diseases and, on account of its mysterious behavior, has assumed a magical nature in its present form, especially in Kwangsi, Yunnan and Kweichow. The contraction of this "ku" disease is generally believed to be through food or drink.

The "Chow Li," as mentioned above, is one of the 13 Chinese Classics. When it first appeared is almost impossible to determine today. According to popular belief, it came from the pen of Chow Kung, the best known prime minister of the Chow Dynasty, who lived about the later part of the 12th century before Christ. Incidentally, it may be mentioned that this Chow Kung is also popularly attributed to be the author of another Classic, namely "Erh Yah," where we have a catalogue of insects. This is a remarkable list as most of the included species are true insects. If one can give us such a catalogue, there is no doubt that he might be capable of conceiving the organization under discussion. But we are equally uncertain about the authorship of this "Erh Yah." However, it is certain that the book, "Chow Li," was produced before the Christian era. It was one of the books edited by Liu Shiang (77-6 B.C.).

Whether these various divisions had been actually put into practice is highly problematical. According to the opinion of some Chinese writers, the content of the whole book has never been put into practice. But even then, the conception of such ideas at such an early date is a wonder in itself.